AN EXAMINATION OF ACTORS THAT IMPACT TECHNOLOGY INTRODUCTION TO FM

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Developing and implementing a technology for Facilities Management (FM) can be a complex process. This is particularly the case when a technology impacts on an organisation as a whole. There are often a number of relevant actors, internal and external to FM, who should be engaged. This engagement is guided by the strategy of the organisation which is led by top management decisions. Indeed, it is top management who have the final decision to implement a technology. Actors of top management and other relevant actors will have their own discourses toward the implementation of the technology based on how they foresee the technology befittingly benefitting the organisation. This paper examines actors who play a relevant and necessary part in supporting and implementing a technology to FM. It examines how an actor's discourse toward the project inhibits or speeds up the implementation of a technology. The methods used for this paper are based on a two year case study in a FM department where a technology development was observed and interviews with key participants were conducted. Critical discourse analysis is used to analyse the data. Prominent discourses that emerge from the data are emphasised during the process of introducing the technology. This research moves beyond focusing purely on project successes but examines the difficulties and the hurdles that must be overcome to reach a successful technology implementation.

Keywords: Critical discourse analysis, facilities management, implementation, technology.

INTRODUCTION

Facilities Management (FM) is a young discipline with a large portfolio. FM emerged as a discipline in the late 1980s and early 1990s (Varcoe, 2000) and is one of the fastest growing professions in the UK (Noor and Pitt, 2009). FM activities include real estate management, change management, health and safety. Additionally it encompasses building maintenance and domestic services such as cleaning and security (Atkin and Brooks, 2000). FM is reactionary, demand-led and an area where top management often look to cut costs rather than invest in (Grimshaw, 2004). According to Cardellino and Finch (2006), FM providers need to prepare for a competitive future that means adapting and evolving in a constantly changing market. Goyal and Pitt (2007) argues that the ability of FM to change and adapt as being fundamental to the discipline. They state how executives realise that there is scope for innovation in FM. Mudrak et al. (2005) and Alexander (1997) explicitly refers to the need to study innovation within the FM organisations. Mudrak et al. (2005) questions

the innovativeness of FM as innovation is often done on an evolutionary scale rather than a revolutionary scale. This paper considers a technology that was innovative for one area of FM, (workspace management). The premise of introducing this technology was not for innovation but was based on a discourse of need with in a different FM area (security).

The context in which FM works within does not make it ideal to introduce new technology and be innovative. Cost efficiency is high on the agenda within the objectives of FM. Top management tend to be cost prudent in investing in FM, buildings are seen as a liability rather than an investment (Alexander, 1997 and Finch, 1997). Indeed, the watchword in FM projects that are innovative is 'added value' (Alexander, 1997). There are a number of key actors who are important in introducing change in FM. Sundbo (2008) argues the intrapreneur has the responsibility of communicating ideas in the organisation he or she is part of. Intrapreneur, here, means what Pinchot (1985) described as an individual who works within an organisation and takes hands-on responsibility for creating innovation in an organisation. Intrapreneurs are similar to entrapreneurs in terms of being innovative thinkers. However, intrapreneurs face different challenges than entrepreneurs. Intrapreneurs never have full power over an innovation as they have to adhere to the strategy within the organisation.

An FM intrapreneur who introduces a technology must ensure it fits the strategy of an organisation. Top management consider strategy as key in their decision to introduce a new technology. Sundbo and Gallouj (2000) point out that strategy forms the framework for management's regulation, which provides the content of policy for innovation. However, top management should not be the only entity to consider here. Technology introduction, at an organisation level, can impact on a number of other areas. Grimshaw (2004) describes organisations as social structures with operations that have an underlying power structure. Actors are those people within an organisation who play an important part of the innovation process (Sundbo and Gallouj, 2000). Actors have a level of power over resources and in determining the need of the technology in the organisational strategy. An intrapreneur must therefore consider other organisational members, their attitudes and behaviours (Fuglsang and Sundbo, 2005). The intrapreneur is not an individual player acting in isolation but is part of a wider network. Power relationships add another dimension to introducing technology. One example of when power relationships come to the fore is in the prioritisation of organisational resources (Nicolajsen, 2008). Considering the dimensions of power relationships, ideas should be communicated on two levels. Firstly top management as the decisive power and secondly, relevant actors as the underlying power.

The above literature clearly cites top management as the ultimate power in influencing technology introduction into FM but also indicates the underlying powers of other actors. This work takes a close examination of the relevant actors involved in introducing the technology and how their discourses toward the technology impacts on its introduction. It considers the context of how technology that is innovative is introduced and the power dimensions that are involved in its introduction. There are two sets of actors considered. Internal actors of FM whom provide the rational for the technology and external actors to FM whom have an influence in determining the technology introduction. An in-depth case study is used to try and provide an important understanding of how actors impact on the technology introduction in FM.

SETTING AND METHODS

The research was based on a case study in an in-house FM department based within a financial institution. Single revelatory case study (Yin, 1994) was deemed as an appropriate approach to the research because the researcher had an opportunity to be a participant observer of the process of introducing a technology into a FM department. Between December 2005 and December 2007 observations and interviews were conducted with facilities managers who were responsibility for different activities in the department. One set of facilities managers were responsible primarily in the security area and the second set was responsible for the workspace management area. The intrapreneur, the individual who led the ideas of the project was also part of the FM department. The specific project was called the 'RFID Project' mainly because the technology being introduced was Radio Frequency Identification (RFID). RFID is a generic name for pervasive technology which uses radio wave technologies to automatically identify individual objects (Jones et al., 2004). This type technology is established in security, supply chain management and has potential innovative uses in facilities management.

The idea for the RFID Project was to introduce the technology to replace an aging security access control system. This falls under physical security. Mehdizadeh (2004) describes physical security as systems that control access to facilities for a certain time-frame and under certain conditions. The RFID technology was going to track building users at entrances and secure areas thereby ensuring the access in and out of the building would be controlled. The second use for RFID was for workspace management which is concerned with developing the most efficient use of space in an organization (Eley and Marmot, 1995). This type of technology was innovative to workspace management through the provision of an automatic way of knowing numbers of people who use the buildings.

Automatically tracking the numbers of people in a building was considered innovative because current data of attaining numbers is a manual exercise conducted through observation studies. Finch (2004) called for automatic identification, radio frequency tracking, machine vision and IT devices to be developed for workspace management. It was envisioned that automatic identification would assist in collecting and interpreting information derived from innovative solutions that should be introduced to monitor occupant movements in buildings.

In the case study, the organisation used flexible working processes where people could work from home or at 'hot-desks' allocated in given areas (Lindkvist and Elmualim, 2009). Flexible working allowed for workspaces to be used efficiently but resulted in an unknown number of people using the buildings of the organisation. The proposed RFID access control system involved placing RFID tags in the identity cards of building users. The data from this system would result in tracking the number of building users at entrances and secure areas. Knowing the numbers in the building and the areas being used would provide workspace managers data on what areas were being over and under used. The automation of gathering data on space rather than conducting manual data gathering would be innovative to workspace management methods and enable the monitoring of space in the building (Lindkvist and Elmualim, 2009).

In order to understand how the organisation and relevant actors impacted on the introduction of the RFID technology, a number of methods were used. Semi-structured interviews were conducted with key participants involved in introducing the

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technology at the start of 2006 and at the end of 2007. The semi-structured interviews were a list of open-ended questions in an otherwise structured interview (Blaxter et al., 2002). The approach supports a natural flow of conversation with the specific purpose of providing information for the research aim.

Participant observation was chosen as the researcher's involvement in the organisation provided the opportunity to track the developments of the project and gather in-depth data on the activities of the participants in the study. This type of observation enables the study of people in their own time and sociology, studying subjects in their "natural habitat" as opposed to the "unnatural" setting of the interview or laboratory (Burawoy, 1991). The data collected was detailed as information was gathered in the early stages of the project. The level of observation focused on the interactions of participants involved in the project and the interactions of participants within the FM department. These interactions were often in the form of ad-hoc conversations or an event that sometimes, but not always, involved the researcher. There were also observations of one-to-one or group meetings and workshops that occurred during the project. Observations were conducted through taking notes and through the recordings of three workshops. The recorded workshops captured the flow of conversations and the interactions and reactions of participants. Corporate artefacts were used to further understand documents that were referred to in interviews or workshops and to contextualise events.

Critical Discourse Analysis (CDA) was used to examine the data. CDA is described as both a method for analysing social practices but also a theory for the mediation between the social and the linguistic (Chouliaraki and Fairclough, 2002). The mediation between the social and the linguistic allows language to be viewed as a social practice which is part of society but at the same time external to it. Language is socially and historically situated (Fairclough, 1995). Much of the analysis for this paper is based on interviews and the recorded workshops. The emphasis on the analysis is the language used by participants which is interpreted and developed to understand the overarching discourse of the actors of the study. Discourse incorporates the social conditions of production, text and interpretation. Social conditions are context related which is underpinned by social organisation. Social organisation can be based either on the social situation or the social environment at the level of social institution and the level of the society (Fairclough, 2001). Fairclough (2001) concluded that using language as a discourse commits oneself to the analysis of the relationship between texts, processes, and their social conditions, both the immediate conditions and social structures.

Initially, the analysis was coded using NVivo 8 but further analysis occurred through the text in word documents to understand the overall story of the case study. This approach allowed individual codes to give moments of what was occurring but at the same time enabled further linkages of discourses to illustrate what was occurring early and later in the case study.

FINDINGS

The table below outlines actors who were identified as being prominent in the introduction of the technology to the case study. It also provides the reason for their involvement in the RFID Project. The internal actors to FM considered here are security managers, workspace managers and the intrapreneur. The external actors considered are top management and the technology department.

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Table 1: Actors of the RFID Project

Actors	Reason in project
Intrapreneur	Linked RFID to address both an organisation need in security and an innovative solution for workspace management.
Security managers	Provided the premise need for the technology
Workspace managers	Provided the rationale for innovation in the project
Technology managers	Responsible for technology resources in the project
Top management	Deciding power in enabling the technology introduction

The intrapreneur of the case study wanted to introduce the RFID technology into the organisation as it met a need in security to replace the aging security system and added value through innovating workspace management. He was the main driver of the RFID project as he sold his ideas to top managers and facilities managers. He was also the project manager of the project. In this way he took what Pinchot (1985) described as taking 'hands on responsibility for the project'. He was the idea generator and was a necessary part of the project. When the intrapreneur spoke about the project he often spoke about the discourse of innovation.

Along with any innovation there is an opportunity. The opportunity that arose for me was we needed to re-evaluate our current card key security system...So in terms of satisfying one need – I created business benefits from that need. Once that was understood I then add value to the proposal of the innovative idea of using RFID not only as a security solution but also a solution for understanding volume and capacity management. (Intrapreneur, 01/11/07)

In this dialogue, the intrapreneur provided the process of thinking through the introduction of the technology from the discourse of innovation. This discourse of innovation was based on 'adding value' which is an aspect that is important in FM projects. The intrapreneur was motivated to introduce the technology based on innovation. He spoke about 'opportunity' in the organisation to exploit his innovative ideas for workspace management. RFID technology has been established in security for access control but had not been used for workspace management. It was the need within security that enabled the intrapreneur to explore his innovative ideas for workspace management. However, as established in the literature, the intraprenuer had to work within the context of the organisation and be aware of the attitude of other influential actors. In terms of developing the intrapreneur's ideas for RFID in its specific context, the influential actors in FM security and workspace management were considered.

The RFID project was based on a discourse of need within security. Throughout the duration of the case study, security managers emphasised the importance of the technology to their area within the discourse of need. They were aware of the repercussions of not getting the technology as "jeopardising something that is quite important". In terms of developing the idea, security actors were active in thinking through the various ways in which RFID technology could feed into their area based on a discourse of experience. This was specifically apparent in a workshop where security managers debated with the intrapreneur over his idea of using RFID technology to replace security guards. The argument of the intrapreneur was that the organisation would receive cost savings but the security managers felt that the level of security would be reduced. Cost saving was perceived by security managers as a "by-

product" that was not necessary as it would result in reducing the number of guards that would be difficult to 'get back'.

It was through the dialogue of debate in this specific workshop that the discourse of need that was emphasised. Debate enabled the technology application for security to be developed. While the discourse of need was emphasised for security in the workshop, a discourse of benefit was emphasised by workspace managers.

Workspace managers differed to the security managers as the application of the technology to their area was seen in terms of added value. In the first year of the project, there were a series of problems highlighted in workspace management. Current workspace management methods were not able to provide accurate data of numbers of people using the building for the flexible work environment of the organisation. While the FM literature, (Lindkvist and Elmualim, 2009; Finch, 2004) clearly points that automatic ways of managing space is necessary, it had not been done. The intrapreneur's innovative idea attempted to introduce automatic ways of managing space. This was supported by workspace managers. They believed that the problems of managing workspace could be resolved through the use of the RFID technology. However, when workspace managers spoke about the RFID project, they spoke about it within a discourse of benefit.

While it is useful to know when people are in the [office], it would also be useful to know what areas are used... we would like to know how space is being used; where people are and where they sit; and more detailed information.

(Workspace Manager; January, 2006)

The words of 'useful' and 'we would like to know' mentioned in the above dialogue indicated no urgency to take advantage of the opportunities being provided through the intrapreneur's ideas. There was no mention of a need for the technology for this area. This was further emphasised in a workshop for workspace managers held by the intrapreneur to develop the technology for their area. However, the workshop was a one-way process where the intrapreneur would mention an idea and the typical response from workspace managers was 'yeah' or 'that would be nice' which coincided with a stagnated stop/start flow of conversation. The motivation to develop the idea was not as strong for workspace managers as it was for security managers which may be explained by the different discourse of benefit or need that both areas within FM had towards the technology.

The discourse of need and discourse of benefit also created tensions between some security managers and the intrapreneur. Security managers were not interested in the added value of the project and felt that it was unnecessary when the need for the technology in security was apparent. One security managers summed this up in the following:

Added value is what drives the project through. I don't think you need that in these circumstances. The old system is well beyond its sell-buy date…

(Senior Security Manager, 08/11/07)

This particular security manager was influential in the project as he was a senior manager of security. He believed that security should have been the only concern of the project and was not interested in added value. This is one example of how added value in an FM project was not seen as complementary but as intrusive in the project. However, it was the discourse of need within security that ensured these tensions did not interfere with the technology introduction.

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Others who were external to the project felt that the need and benefit dichotomy was necessary in the project. It was necessary to have the discourses of need and benefit in order for the technology to be considered by top management. This was particularly articulated by the IT Infrastructure Manager.

... There was a clever association of technologies in their own right they wouldn't really be able to stand up but together they actually have some business benefits working together.

(IT Infrastructure Manager, 03/12/2007)

The external actors recognised the importance of the need and benefit discourses in providing a rationale for the project but prominent external actors in the case study mainly came from a discourse of power.

The technology department played an integral role in the project as this department was responsible for all the IT systems in the organisation. Any new technology that was to be introduced into the organisation had to be tested and approved by the technology department. Tensions between the intrapreneur and the technology department were apparent at an early stage of the project. The technology department felt that the intrapreneur had taken over their responsibilities that they typically do in projects of this kind. One technology manager mentioned how the technology department "don't like being trapped in a corner". These tensions may have contributed to the difficulty in getting the technology department to approve RIFD for the organisation. Added to this, the intrapreneur perceived that the technology department was unwilling to agree to his ideas for RFID in security. The intrapreneur's impression of the technology department was summed up as "they [technology department] just don't want to know about RFID at all". But at the same time he recognised the necessity of having the technology department involved in the project. As in one workshop, he referred to how it was difficult to move forward on the organisation's approval process without the support of the technology department. However, much of the reluctance of the technology department to get involved with the project was due to the change of strategy in the organisation in the second year of the project.

Top management were mainly involved in the project through an approval process similar to that of the stage gate model (see Cooper, 1988). The approval process had a discourse of power in the overall decision to adopt the technology for the proposed applications. The process of approval involved six stages and required a continuous discourse of persuasion by the intrapreneur for each stage. This process supported the view of Cardellino and Finch (2006) that top management can change their minds about the decision to adopt an idea any time. And while the intrapreneur succeeded in getting the first three stages approved, the change in strategy in the organisation meant that the RFID Project became a low priority in top management. This change of strategy was primarily due to a merger with another organisation.

The merger, known as the 'Merger Project' impacted upon the resources available for the RFID project. The intrapreneur was initially told that the merger would not affect his project as it was high priority in the organisation but he was later told by his head of department to halt the project temporarily as resources were being consumed by the merger project (Observation notes, August 2006 and April 2007). This decision led other departments, which included the technology department, to reallocate their resources to the merger project. The RFID project was reliant on the resources of the technology department in order to be introduced. This ability to change minds and

reprioritise emphasised the power that the top management had in the introduction of technology to FM.

DISCUSSION

The intrapreneur of the case study fitted in with some of the characteristics described by Pinchot (1985).This description was an individual who is motivated by wanting freedom and access to corporate researches; goal oriented and self motivated but also responds to corporate rewards and recognition; adept at getting others to agree to private vision; has a bias for action. The intrapreneur was clearly motivated in seeing his ideas through in the RFID project. The organisational need provided the intrapreneur with the 'opportunity' to see his ideas become fruitful. In this sense FM were being reactive to an organisation need (Grimshaw, 2004). On the other hand, the intrapreneur was also innovative through the adding value for workspace management. Need and benefit meant that the intrapreneur had added value in the project which is a watchword for FM projects (Alexander, 1997). The innovation discourse of the intrapreneur was a key motivator in implementing the technology.

The underlying power of internal actors from security and workspace management was not as emphasised within this paper but what was emphasised was the importance of the two discourses of need and benefit. The dichotomy of these two discourses meant that the two areas of FM wanted the technology but to different degrees. Workspace managers recognised the benefits they would receive from the project. At the same time the discourse of benefit seemed to underlie a lack of interest in the project. It was not necessary for them to have the technology in order to do their job. This was particularly noted when they were asked to contribute to the development of the technology and a discourse of confirmation was apparent. This was in stark contrast to the security workshop where need for the technology was stressed. The conflicting views of how the technology should be applied in their area led to it being shaped by security and not only by the intrapreneur's ideas. Bessant and Tidd (2007) refer to how a lack of conflict results in a lack of motivation and one-way reporting in meetings. The examination of the discourse of benefit and the discourse of need throws some light on explaining what motivates actors to develop ideas and the level of impact they will have in a project.

The discourse of power was apparent by the external actors of the technology department and top management. This discourse of power highlighted how the intrapreneur never had full power over the project and how power relationships are important in introducing technology which supports Nicolajsen, (2008) view. The power relationships were particularly apparent with the technology department. The technology department could understand the use of RFID for both security and workspace management. This department would not gain directly for the introduction of RFID but were a necessary part in resourcing the implementation of RFID. In a discourse of power, the intrapreneur relied on the technology department's resources in making his ideas become real. These power relations resulted in tensions between the intrapreneur and the technology department as the intrapreneur believed the technology department had no interest in the project. However, part of the reluctance of the technology department to commit resources to the project was influenced by decisions of top management. Top management had the final decision to implement the technology and were therefore had the main discourse of power. They decided when the RFID project was a priority and when other projects should become more important. The technology department was answerable to top management and when

top management reprioritised the RFID project, the technology department had to also.

The context of introducing the RFID technology was right in terms of how the technology met a discourse of need and discourse of benefit for the internal actors of FM. However, external actors, through a discourse of power, determined when and if the technology would be introduced.

CONCLUSIONS

This paper examined the introduction of an innovative technology into in-house FM within a financial institution. CDA was used to investigate the mobilised discourses by various actors in the process that best met their vested interest. The examination of these discourses in introducing a technology also throws light on the innovativeness of FM. The focus here was internal and external actors who directly impacted on the project. The discourse of benefit and discourse of need was particularly important in providing a rationale for the technology as well as developing it for the two areas of FM. While added value is the 'watchword' for FM project, it was not always seen as a positive within FM. However, the discourse of power was deterministic on two levels; resourcing the project and the decision to implement the technology.

This analysis does not give the full story of actors who impact on technology. Other actors were also prominent in this case study that included staff union and there were also regulatory bodies such as the Financial Service Authority (FSA) who were also important in developing the technology. Further, research is necessary on how these more regulatory powers impact on the introduction of technology to FM.

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